PREMIER®

SPLIT TYPE CEILING CASSETTE AIR CONDITIONER

# Service Manual

AA-2117

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# Technical Data

## 1. Range & Conditions

### 1.1 Operating Range

| Operating Modes | Temperature | Indoor Temperature | Outdoor Temperature |
|---|---|---|---|
| Cooling | Max. | 32℃ DB/27℃ WB | 43℃ DB |
| | Min. | 21℃ DB/15℃ WB | 21℃ DB |

### 1.2 Operating Conditions

| | **Rated Operating Conditions** | |
|---|---|---|
| | Indoor Temperature | Outdoor Temperature |
| Cooling | 27℃ DB/19℃ WB | 35℃ DB/24℃ WB |
| Heating | 20℃ | 7℃ DB/6℃ WB |
| Tubing Length (m) | 4.0 | |
| | **Max. Operating Value** | |
| | Indoor Temperature | Outdoor Temperature |
| Cooling | 32℃ DB/23℃ WB | 43℃ DB |

**DB: Dry-bulb temperature**

**WB: Wet-bulb temperature**

# 2. Specifications

## 2.1 Unit Specifications

| | | | | |
|---|---|---|---|---|
| **Power supply** | | | 220V～ 60Hz (single phase) | |
| **Rated voltage** | | V | 220 | |
| **Performance** | | | | |
| | Rated capacity | Btu/h | 9000 | |
| | Air circulation(High) | $m^3/h$ | 480 | |
| | Moisture removal (High) | l/h | 1.0 | |
| **Electrical rating** | | | | |
| | Voltage range | V | 198~242 | |
| | Operating current | A | 4.5 | |
| | Power input | W | 980 | |
| | E.E.R / C.O.P | W/W | 2.65 | |
| **Features** | | | | |
| | Controls / Temperature control | | Microprocessor / I.C thermostat | |
| | Control unit | | Infrared remote control transmitter | |
| | Timer | | ON/OFF 24 hours | |
| | Fan speed | Indoor /Outdoor | High, Medium, Low, Auto /High | |
| | Airflow direction | Horizontal | Manual | |
| | | Vertical | Auto | |
| | Air filter | | Anti-mold, washable | |
| | Compressor | | Rotary-type (Hermetic) | |
| | Refrigerant | /g | R22 / 600 | |
| | Refrigerant control | | Capillary tube | |
| | Noise | Indoor dB-A | 40 | |
| | | Outdoor dB-A | 52 | |
| | Pipeline connection manner | | Flare | |
| | Max. pipeline length | m | 9.0 | |
| | Refrigerant tubing diameter (in) | Narrow tube mm | 6.35 (1/4") | |
| | | Wide tube mm | 9.52 (3/8") | |
| **Dimensions & Weight** | | | Indoor unit | Outdoor unit |
| | Unit dimensions | Height mm | | 675 |
| | | Width mm | | 430 |
| | | Depth mm | | 265 |
| | Package dimensions | Height mm | | 820 |
| | | Width mm | | 535 |
| | | Depth mm | | 385 |
| | Weight | Cross weight kg | 16 | 25 |

**Data subject to change without notice**

# 2.2 Specifications of main parts

### 2.2.1 Indoor unit AA-2117

| | | | |
|---|---|---|---|
| **Controller** | | | |
| | Part No. | | JUK6.672.848 |
| | Controller | | Microprocessor |
| | Fuse | | 250V T3.15A |
| **Remote controller** | | | KK10B-C2 |
| **Fan & Fan motor** | | | |
| | Type | | Cross-flow fan |
| | Quantity / Diameter / Length | mm | 1 /Φ86 /640 |
| | Fan motor model | | Welling: RPG20E-2 |
| | Pole / Rotation of motor (rpm, 220V High speed) | | 4 / 1250 |
| | Rated power output | W | 16 |
| | Coil resistance (Ambient temp 20℃) | Ω | red-purple: 290±15%, purple -white :403±15% |
| | Operating capacitor | μF | 1.0 |
| | | VAC | 450 |
| **Louver motor** | | | |
| | Type | | Step motor |
| | Model | | ZTC1.01 |
| | Rated voltage | V | 12VDC±10% |
| | Coil resistance (Ambient temperature 25℃) | Ω | 80Ω ±10% |
| **Heat exchanger** | | | |
| | Fin | | Aluminum fin / Copper tube |
| | Row | | 1 |
| | Row pitch | mm | 1.4 |
| | Face area | $m^2$ | 0.144 |

**Data subject to change without notice**

## 2.2.2 Outdoor unit AA-2117

| | | | |
|---|---|---|---|
| **Controller PCB** | | | |
| | Part No. | | - |
| | Fuse | | - |
| **Compressor** | | | |
| | Controller model | | Highly: SD134SN-H3AU |
| | Compressor power input | W | 895 |
| | Compressor oil / Amount | CC | Highly: DIAMOND MS-56 / 270 |
| | Overload protector | | Highly: BF840-KB |
| | Compressor locked rotor amperes | A | 21 |
| | Coil resistance (Ambient temp 20℃) | Ω | Highly: C-R: 3.53, C-S: 4.02 |
| | Operating capacitor | μF/ VAC | Highly: 25/ 450 |
| **Fan & Fan motor** | | | |
| | Type | | Propeller fan |
| | Amount / Diameter | mm | 1 /Φ400 |
| | Fan motor model / amount | | Welling: YDK19-6V-2/ |
| | Pole / Rotation of motor (220V, High speed) rpm | | 6 ..860 |
| | Rated power output | W | 19 |
| | Coil resistance (Ambient temp 20℃) | Ω | white-gray :254±15%,/<br>brown-white:150±15%/ |
| | Safety devices | | Open : 130±8℃ Close: 82±15℃ |
| | Operating capacitor | μF | 2.0 |
| | | VAC | 450 |
| **Heat exchanger** | | | |
| | Fin | | Aluminum fin / Copper tube |
| | Rows | | 1 |
| | Fin pitch | mm | 1.4 |
| | Face area | $m^2$ | 0.177 |

**Data subject to change without notice**

# 2.3 Specifications of other parts

## Indoor unit

| | |
|---|---|
| **Transformer** | DB-13-01 |

| | |
|---|---|
| **Thermal resistor** | Indoor temperature KTEC-41-C12 |
| | Coiled pipe KTM-41-C9 |
| Resistance temperature 25℃ K Ω | 10 |

| | |
|---|---|
| **Power supply length (m) / cross section** | 2.5<br>AWG16 |
| Rated value | 15A, 250VAC |

| | |
|---|---|
| **Power relay** | JQX-102F-012-P |
| Coil rated voltage,<br>Current coil resistance(20℃) | 12V±10%, 20A<br>160Ω |

## Outdoor unit

**Data subject to change without notice**

# 3. Control Specifications

## 3.1 Control functions

### 3.1.1 Switches input:

Press on / off button in the off mode. The air conditioner is turned on and works at 24℃ in sweep mode automatically. Press the button when the unit is running or in test run mode, air conditioner is turned off.

Press the button over four seconds until the buzzer beeps twice. Air conditioner enters the test run mode. Users can use the remote controller to turn off the units or change the running mode. The air conditioner will start the normal operation automatically if the test running time is for more than 15minutes. Air conditioner will stop and exit the test run mode when users press on / off button which is on the indoor unit or on the remote controller.

### 3.1.2 Temperature control:

Remote controller will transmit indoor temperature and other information to indoor unit every 3 minutes. If the master controller MCU can 't receive remote signal for 10minutes, air conditioner will control the running automatically by indoor temperature sensor.

When indoor temperature sensor is being used, It has 3℃ temperature compensation in heating mode. There is no temperature compensation in cooling and dehumidification mode.

### 3.1.3 Sleep mode:

For better comfort in sleeping and energy saving. Temperature will be adjusted automatically when the sleep mode is set. The set temperature will increase 1℃ after running 1 / 2 hour in cooling and dehumidification mode, and 1℃ after another 1 / 2 hour. Temperature will decrease 2℃ after running 1 / 2 hour in heating mode, and 2℃ after another 1 / 2 hour. The set temperature will be controlled between 16 ℃ and 30℃.

## 3.2 Operating mode

### 3.2.1 Auto-operating mode:

When air conditioner stars running or the set temperature is adjusted under this mode. Master controller MCU can select running mode automatically by indoor temperature and set temperature. It runs in cooling mode when Tr≥Ts (Tr: Room temperature, Ts: Set temperature) and in heating mode when Tr<Ts.

In heating mode, When Tr≥Ts+3℃ lasts for 15minutes. It turns into cooling mode.

In cooling mode, when Tr≤Ts-2℃ lasts for 15 minutes. It turns into heating mode.

When Ts-2℃< Tr < Ts+3℃,it turns into original mode.

Temperature control range: 16℃-30℃; Original value:24℃;

Temperature control precision:±1℃;

### 3.2.2 Cooling:

Temperature control range: 16℃-30℃; Original value:24℃;

Temperature control precision:±1℃;

**Characters on control:**

4-way reversing valve closes:

When Tr≥Ts+1℃, compressor runs.

When Tr≤Ts℃, compressor stops.

The control circuit will stop compressor only after it has run at least 5minutes.The compressor can be restarted 3minutes later the turn-off.

**Fan speed control:**

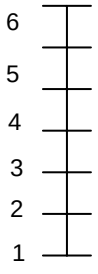
Auto: When Tr>Ts+2℃, high speed;

When Ts+1℃≤Tr<Ts+2℃,medium speed;

When Tr< Ts+1℃, low speed.

Manual: Users can select the fan speed of high, medium or low level as needed in the turn-on status.

**Louver adjustment:**




**Close**

Manual: Set the louver position as needed.

(Position 1-6 in the figure.)

Auto: In the first 20 minutes of cooling operation. The louver is at position 4. After 20minutes, it runs automatically to position 6.

### 3.2.3 Dehumidification:

Temperature control range: 16℃-30℃; Original value:24℃;

Temperature control precision:±1℃;

**Characters on control:**

4-way reversing valve closes.

When Tr≥Ts+2℃,the running mode is the same to the cooling operation.

When Ts-1℃< Tr < Ts+2℃, compressor and external fan motor run continuously. And internal fan motor runs between low wind for 10 seconds and breeze for 20 seconds continuously.

When 15℃< Tr < Ts-1℃, compressor and external fan motor work for 3 minutes, then stop for 9minutes. When compressor is running, internal fan motor runs between low speed for 10 seconds and breeze for 20 seconds. Internal fan motor runs at breeze while compressor is off. Internal fan motor stops working 30 seconds later the turn-off of compressor.

When Tr≤15℃, indoor and outdoor unit both stop working . Louver blades can be controlled.

**Louver adjustment:**

Manual: Users can set the position as needed. (Positions 1-6 in the figure)

Auto: The sweep range is fixedaat position 6.

### 3.2.4 Heating

Temperature control range: 16℃-30℃; Original value:24℃;

Temperature control precision:±1℃;

**Characters on control:**

4-way reversing valve opens.

When Tr≤Ts-1℃, compressor , 4-way reversing valve and external fan motor all open .

When Tr≥Ts+1℃, compressor and external fan motor both close. Indoor fan motor blows breeze.

When Trc (Trc: The indoor coiled temperature) drops blow F℃, Air conditioner enters into cool- air-flow prevention operation; Pause indicator lights.

**Fan speed control:**

Manual: Users can select the fan speed of high, medium or low level as needed in the turn-on status.

Auto: When Tr< Ts-2℃, high.

When Tr≥Ts-2℃,medium.

**Louver adjustment:**

Manual: Users can set the position as needed.

(Positions 1-6 in the figure)

Auto: When Trc<39℃,the sweep range is at position 5.

When Tr≥42℃, the sweep range is at position 4.

When 39℃≤Tr<42℃,the sweep range keeps at original position.

**Compressor control:**

The control circuit will stop compressor only after it has run at least 5 minutes. Compressor can be restarted 5 minutes later the turn-off.

## 3.3 Protect functions

### 3.3.1 Delay-starting protection for the compressor.

Compress will restart working 3 minutes (5 minutes in heating) later the turn-off of compressor or power-off to keep the pressure balance of the cooling system.

### 3.3.2 Cooling air flow protection:

In heating operation, when Trc<F℃,and compressor stops or the running time of compressor is not more than 5 minutes. Air conditioner will enter into the cool-air-flow protection. Louver runs into the position 6 and can 't be controlled. Internal fan motor stops and pause indicator lights.

### 3.3.3 Freeze-prevention: To prevent indoor heat exchanger freezing in cooling and dehumidification operation.

Compressor will stop running when it runs at least 10 minutes and Trc≤-2℃. If compressor is off for more than 6 minutes, or the coiled pipe temperature rises above 8℃ and compressor is off at least 3 minutes. Compressor will restart working.

### 3.3.4 Heating overload working:

When Trc≥A℃, the unit enters into overload protection. And indoor fan speed should be adjusted to a higher level automatically.

When Trc≥B℃, outdoor fan stops. And it will restart working when coiled pipe temperature drops

to D℃. Air conditioner will exit overload protection when coiled pipe temperature drops blow E℃. Indoor fan motor resumes to the normal status.

Compressor will stop when the coiled pipe temperature is above C℃ and the build-up time of compressor running is for more than 5 minutes.

### 3.3.5 Defrost:

**A: Defrost conditions.**

a. Indoor unit enters into overload prevention and outdoor unit stops. When outdoor fan motor runs for more than 10 minutes, and the build-up time of compressor running is for more than 50 minutes, Toc≤A-1℃ ( Toc: Coiled pipe temperature of the outdoor unit.)

b. Not overload, but Toc drops blow -17℃ for 30 seconds. The build-up time of compressor running is for more than 25 minutes.

c. The build-up time of compressor running is for more than 3 hours. And Toc drops blow -2℃ for 5 minutes. Trc≤G-2℃ and Trc≤(Tr+H)℃.

d. The build-up time of compressor running is for more than 3 / 2 hours. And it reaches the condition of the unit stopping. Toc drops blow -2℃ for 3 minutes(overload).or Toc≤-2℃ and Trc≤G+2℃ (not overload).

e. The build-up time of compressor running is for more than 50minutes.
Toc ≤-2℃, Trc drops at least 3℃ and Trc≤G℃, Trc≤(Tr+H) ℃.

**It will defrost under the one of the conditions.**

**B. Defrost:**

Compressor and outdoor fan motor will stop working after entering into defrost running. 55 seconds later, 4-way reversing valve will close. Another 5 seconds, compressor starts running. When the time of the compressor running is for more than 10 minutes or outdoor coiled temperature is above 20℃, Compressor stops. 55 seconds later, 4-way reversing valve will open. Another 5 seconds later, compressor and outdoor fan motor will restart working and exit defrosting operation. In defrosting operation, the time of compressor running is at least 3 minutes. Cool airflow prevention and heat blowing are both efficient.

### 3.3.6 Troubleshooting display and prevention.

a. Pause indicator flashes quickly --- The driver or the control current of the louver is abnormal. And the louver blades do not work.

b. Timer indicator flashes quickly --- The circuit of PG motor is abnormal; air conditioner stops.

c. Running indicator flashes --- The circuit of outdoor coiled temperature sensor is abnormal. The unit can't run in heating mode.

d. Pause indicator flashes --- The circuit of the temperature sensor is abnormal. The unit runs in 24℃.

e. Timer indicator flashes --- The circuit of the coiled pipe of indoor temperature sensor is abnormal. The unit can't run in heating mode.

## 3.4 Other functions

### 3.4.1 Auto-diagnosis

Test terminal on the main panel is shorted. The Auto-diagnosis functions are in the following steps when the power is turned on.

Buzzer beeps 1s → No output 0.5s → Running indicator on 0.5s → Timer indicator on 0.5s →

No output 0.5s → Compressor 0.5 → Outdoor fan motor 0.5s → 4-way reversing valve 0.5s → Electric heating 0.5s → Indoor fan motor 0.5s → $Flap_{-a}$0.5s → $Flap_{-b}$0.5s → $Flap_{-c}$0.5s → $Flap_{-d}$0.5s → No output 0.5s → Complete output 1s.

In the Auto-diagnosis operation, the buzzer beeps if the circuits of the two indoor temperature sensors are abnormal.

### 3.4.2 Timer saving:

The time-shortening terminal on the main panel is shorted when the unit is powered on. The buzzer beeps twice and the master controller CUP runs as 60 times as the former speed.

### 3.4.3 HA input:

Posed with 200-300ms high level on the HA input end, the unit is turned on.

Posed with 500-600ms high level on the HA input end, the unit is turned off.

The unit runs in the former mode when restarted.

### 3.4.4 Auxiliary electric heating:

**(1) The starting conditions of auxiliary electric heating.**

a. In heating or Auto mode.

b. Compressor runs for more than 1 minute.

c. Tr≤14℃.

d. Ts-Tr≥6℃.

e. Indoor fan motor is running.

**(2) Auxiliary electric heating will be closed under the one of the following conditions.**

a. Tr≥18℃.

b. Ts-Tr≤2℃.

c. Trc≥A-2.

d. Indoor fan motor stops working.

e. The unit enters into defrosting operation.

**Note:** The electric heating will be off when the temperature reaches point C, and it will be restarted when the coiled pipe temperature of indoor unit drops blow D-1℃ and it is satisfied with all the conditions of (1).

**(3) Defrost when electric heating is running.**

If electric heating is running or the turn-off time is less than 10 minutes. It will enter into defrosting operation and indoor fan blow breeze for 1 minutes.

**(4) The unit is off when electric heating is running.**

If electric heating is running or the turn-off time is less than 10 minutes. The indoor fan motor will blow breeze for 1 minute.

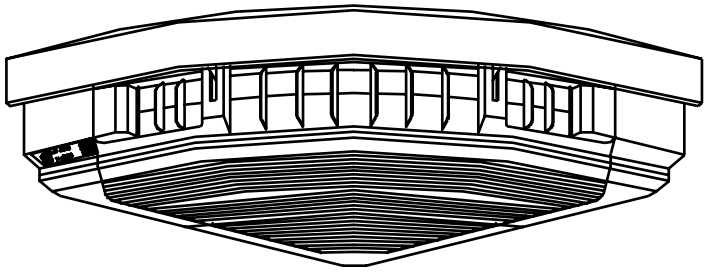
## 3.5 Temperature table of preventing point

| Model | A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|
| AA-2117 | 49 | 52 | 65 | 44 | 42 | 32 | 36 | 24 |

# 4. Dimensional data

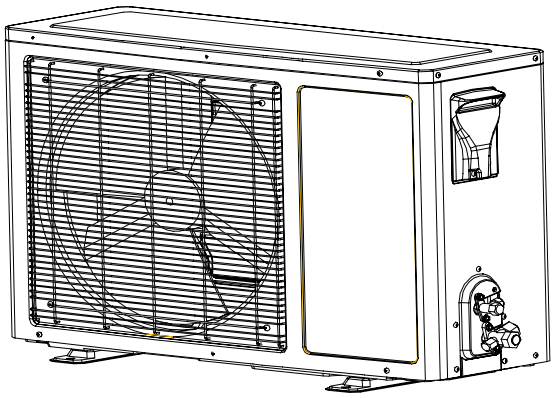
## 4.1 Unit

### 4.1.1 Indoor unit



3-D view

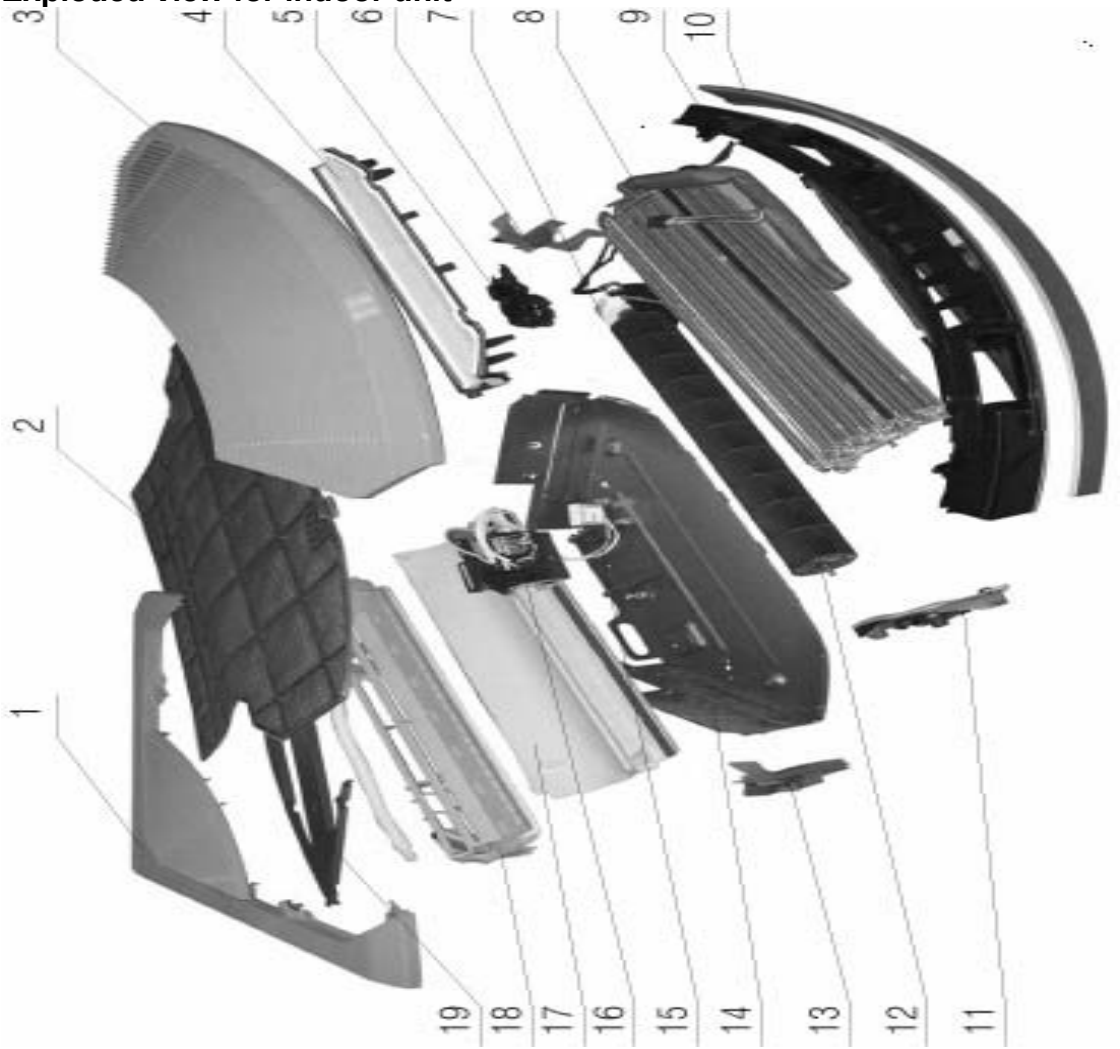
## 4.1.2 Outdoor unit



**Note:**

The above figures are only schematic, and they may be slightly different from the actual appliances you bought.

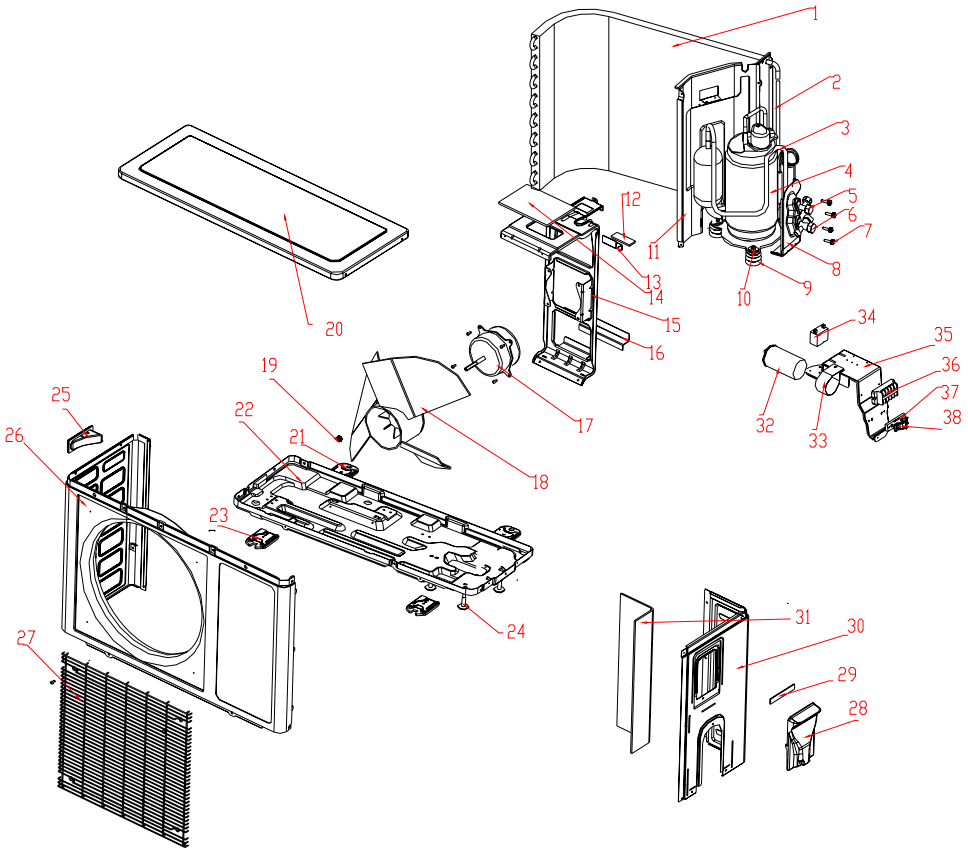
## Exploded view for indoor unit



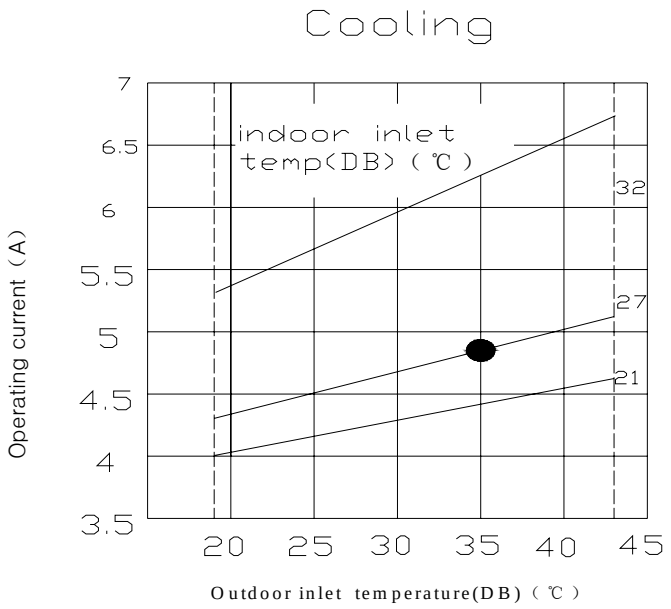

| NO. | NAME | CODE | |
|---|---|---|---|
| 1 | WIND-ABSORPTION BAR BRACKET ASSEMBLY | 11 | BEARING ASSEMBLY |
| 2 | AIR FILTER | 12 | INDOOR FAN |
| 3 | WIND-ABSORPTION BAR | 13 | LEFT FILTER BRACKET ASSEMBLY |
| 4 | AIR GUIDING BOARD | 14 | COVER ASSEMBLY |
| 5 | FAN MOTOR UPPER COVER ASSEMBLY | 15 | TRANSFORMER |
| 6 | RIGHT FILTER BRACKT ASSEMBLY | 16 | INDOOR ELETRIC |

| | | | |
|---|---|---|---|
| | | | CONTROL ASSEMBLY |
| 7 | INDOOR FAN MOTOR | 17 | Air outlet guid |
| 8 | EVAPORATOR ASSEMBLY | 18 | DRAIN CANAL ASSEMBLY |
| 9 | Air supply shelf Ass’y | 19 | DRAIN CANAL INSTALL BOARD |
| 10 | Air shutter Ass’y | 20 | |

## Exploded view for outdoor unit



# 5. Performance Charts



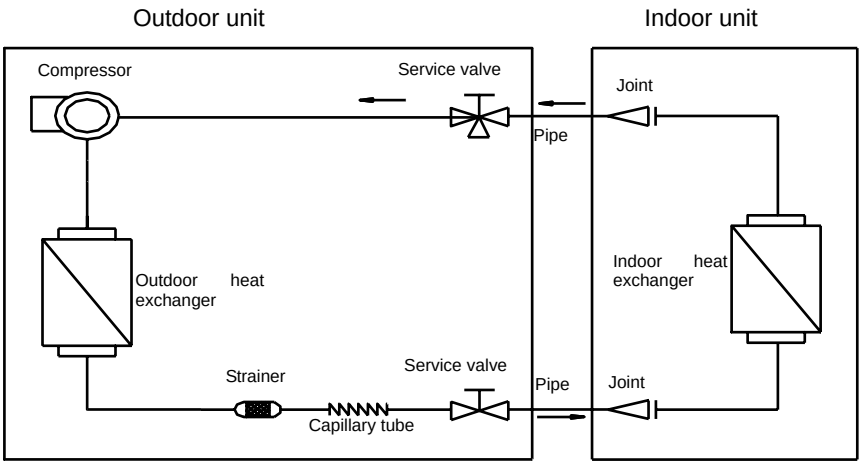

**Note:**

Over prevention operates to protect the air conditioner when the outdoor ambient temperature reaches an abnormally high level while in heating mode.

●**……**Points of rating condition

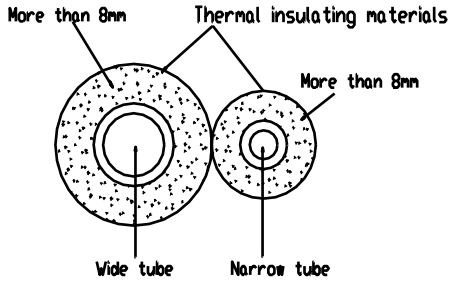
Note: The speed of the indoor unit is high.

# 6. Refrigerant Flow Diagram



## Thermal insulating of refrigerant pipeline

To prevent heat loss and condensed water from dropping on the floor, the wide and narrow tube of air conditioner should be wrapped with thermal insulating materials. For using capillary tube, and the tubes are in low temperature, the thickness of thermal insulating materials shall be more than 8mm.



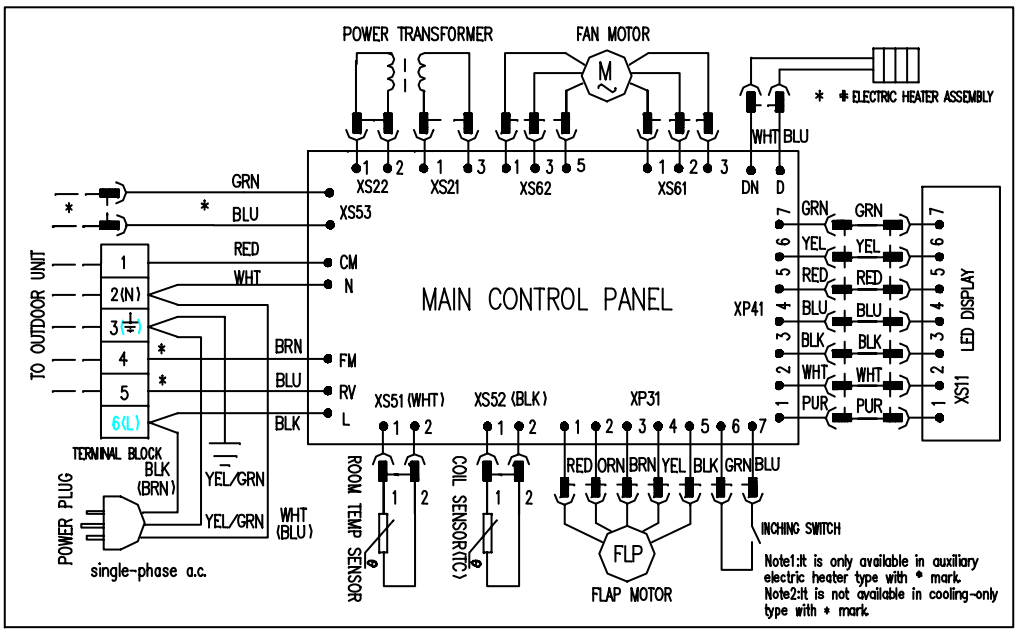

| Model | AA-2117 |
|---|---|
| Narrow tube | Φ6.35mm(1/4”) |
| Wide tube | Φ9.52mm(3/8”) |

# 7. Circuit Diagram

## 7.1 Electrical wiring diagram for indoor unit

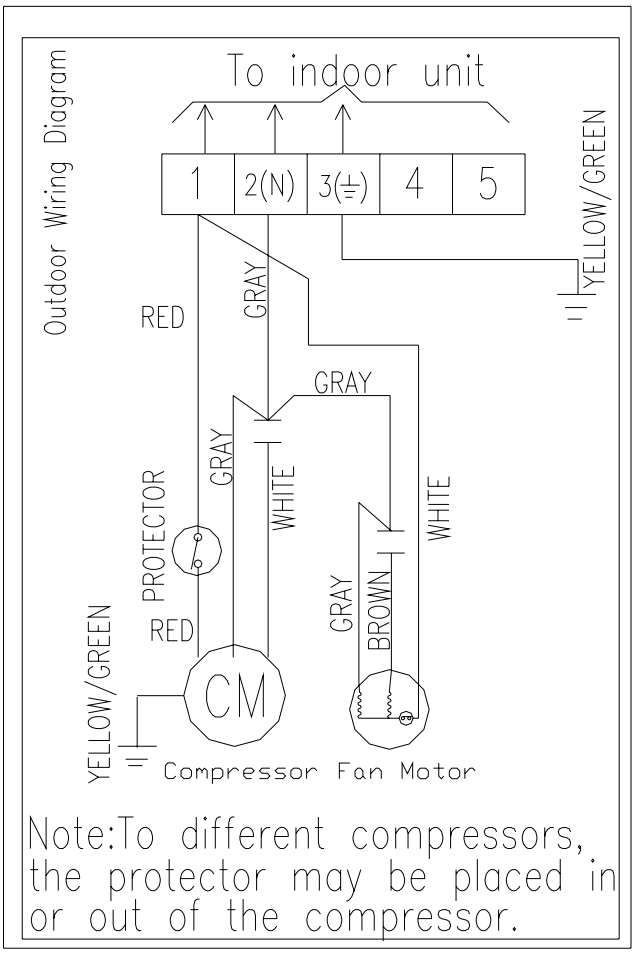
**Warning**

**To avoid electrical shock hazard, be sure to disconnect power before checking, servicing and/or cleaning any electrical parts.**



## 7.2 Electrical wiring diagram for outdoor unit

**Warning** **To avoid electrical shock hazard, be sure to disconnect power before checking, servicing and/or cleaning any electrical parts.**



# 8. Troubleshooting

## 8.1 Check before troubleshooting

**Warning:**

High-voltage will result in electric shock or death.

Always cut off the power before checking and maintaining.

### 8.1.1 Check power line

To check whether the power line is connected correctly according to the wiring diagram.

### 8.1.2 Check unit wiring

To check whether the inter-unit wires are connected correctly.

### 8.1.3 Check power supply

To check whether the power supply is in the specified range (220±10%).

To check whether the power supply is being supplied.

### 8.1.4 Check connector and lead wire of indoor and outdoor units.

To check whether the insulating cover of the lead wire is damaged.

To check whether the lead wire and the connector are connected well

To check wires.

## 8.2 The air conditioner does not work

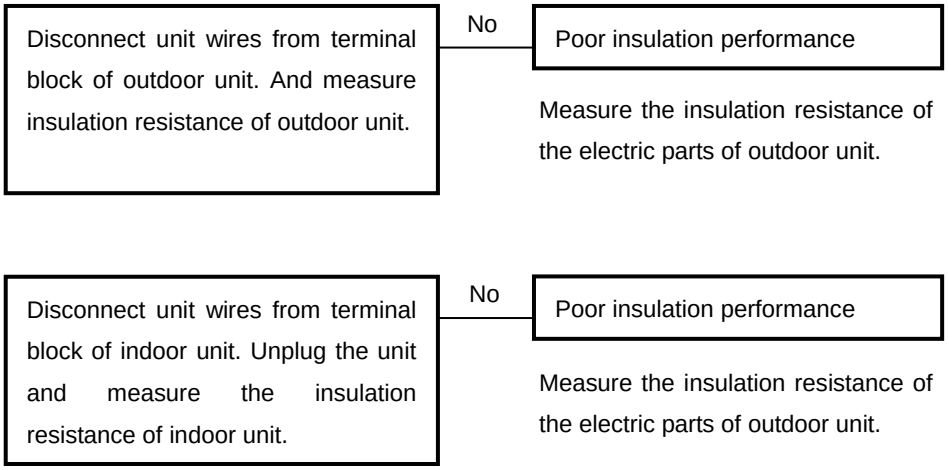
### 8.2.1 Leakage protector is open or fuse is burnt.

A. Setting leakage protector to “ON”, it opens immediately (can not reset).

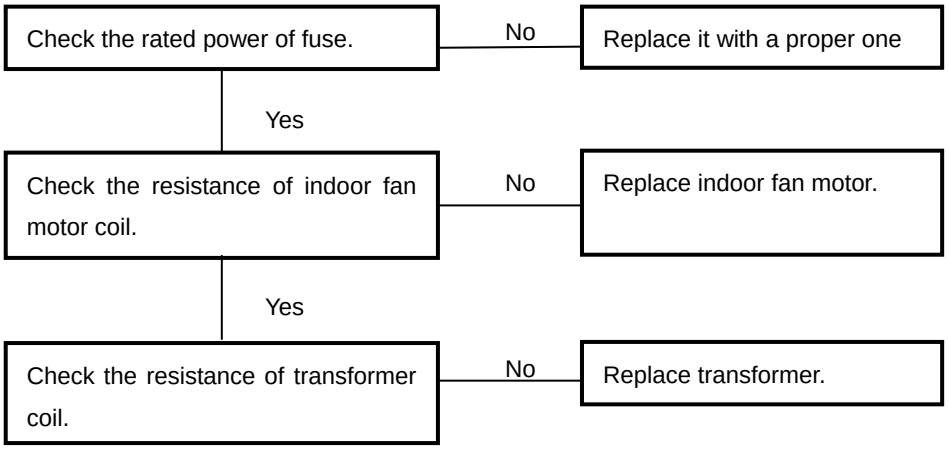
There is possibility of ground fault.

Check insulation resistance (The insulation resistance shall be more than 2MΩ).

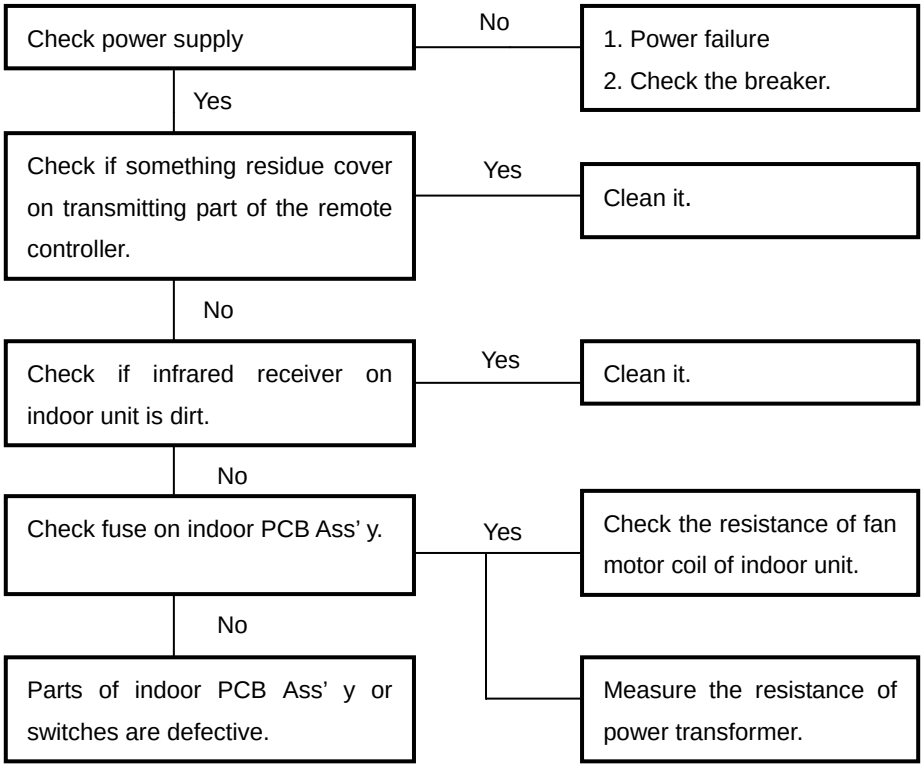
B. Leakage protector is **OFF.**


Disconnect unit wires from terminal block of outdoor unit. And measure insulation resistance of outdoor unit.
No
Poor insulation performance
Measure the insulation resistance of the electric parts of outdoor unit.
Disconnect unit wires from terminal block of indoor unit. Unplug the unit and measure the insulation resistance of indoor unit.
No
Poor insulation performance
Measure the insulation resistance of the electric parts of outdoor unit.

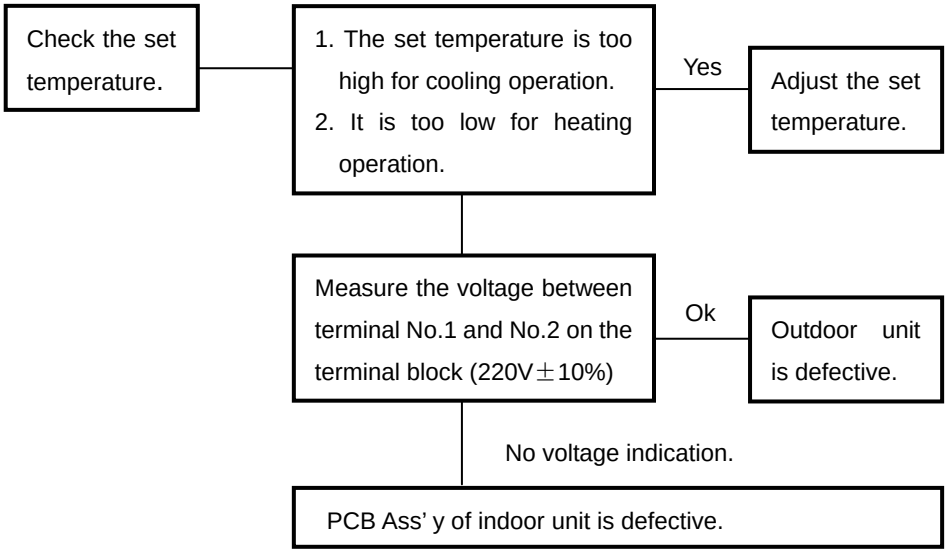
C. The fuse is open in several minutes after turning air conditioner on.



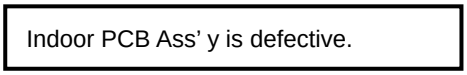

### 8.2.2 The indoor and outdoor units do not work.


Check power supply
No
1. Power failure
2. Check the breaker.
Yes
Check if something residue cover on transmitting part of the remote controller.
Yes
Clean it.
No
Check if infrared receiver on indoor unit is dirt.
Yes
Clean it.
No
Check fuse on indoor PCB Ass' y.
Yes
Check the resistance of fan motor coil of indoor unit.
No
Parts of indoor PCB Ass' y or switches are defective.
Measure the resistance of power transformer.

### 8.2.3 Only outdoor unit does not work:

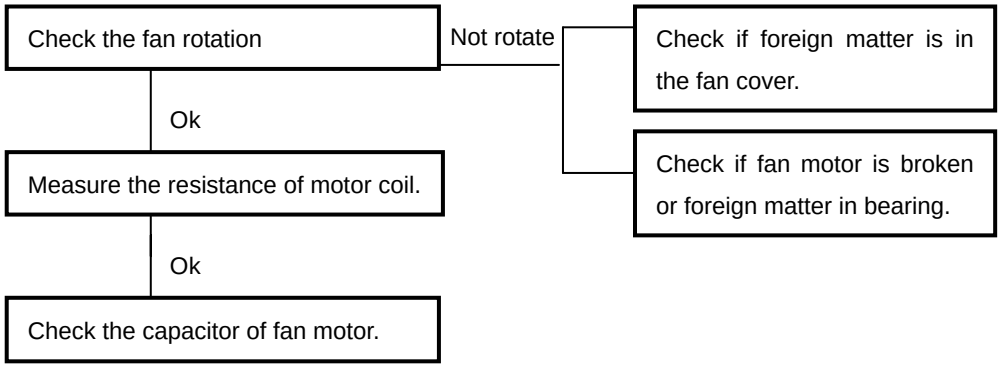

Check the set temperature.
1. The set temperature is too high for cooling operation.
2. It is too low for heating operation.
Yes
Adjust the set temperature.
Measure the voltage between terminal No.1 and No.2 on the terminal block (220V±10%)
Ok
Outdoor unit is defective.
No voltage indication.
PCB Ass' y of indoor unit is defective.

### 8.2.4 Only indoor unit does not work.

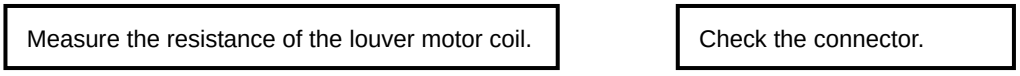



## 8.3 Some parts of the air conditioner do not work

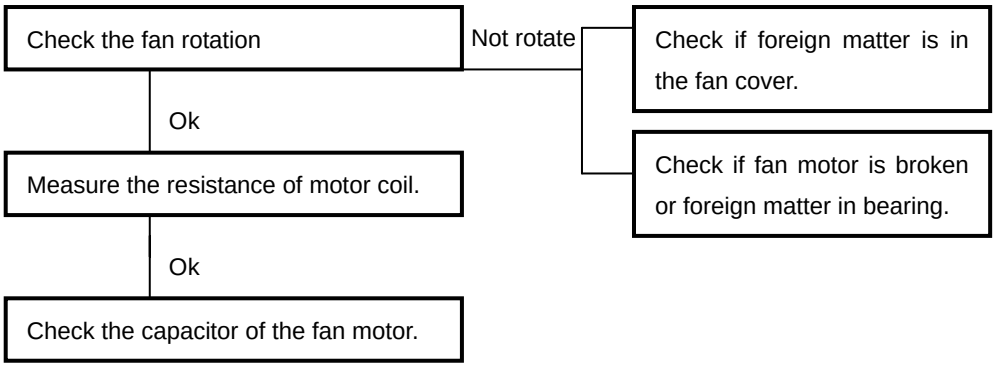
### 8.3.1 Only indoor fan does not work.


Check the fan rotation
Not rotate
Check if foreign matter is in the fan cover.
Ok
Measure the resistance of motor coil.
Check if fan motor is broken or foreign matter in bearing.
Ok
Check the capacitor of fan motor.

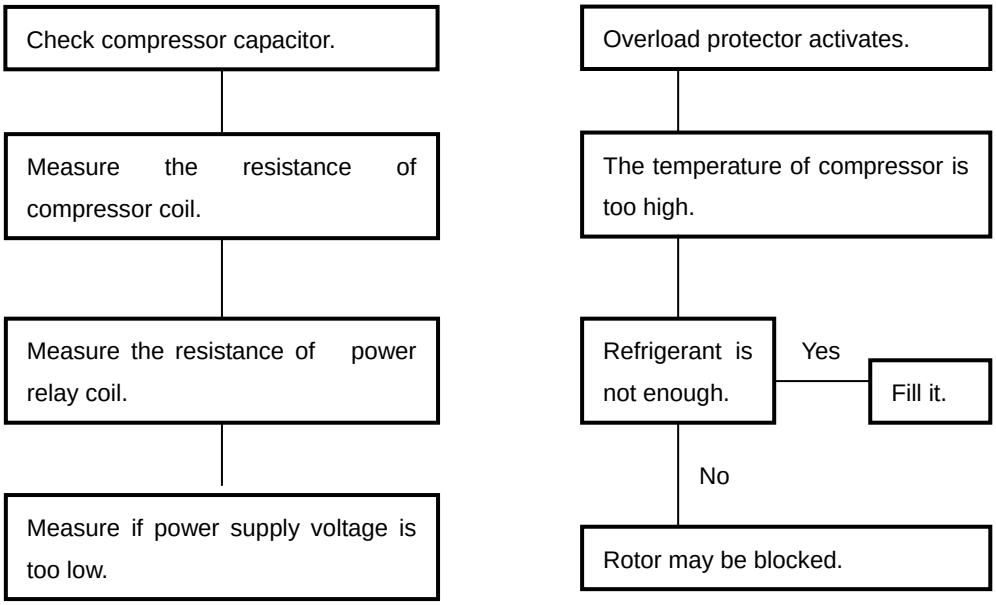
### 8.3.2 Only louver motor does not run.



### 8.3.3 Only outdoor fan motor dos not run.

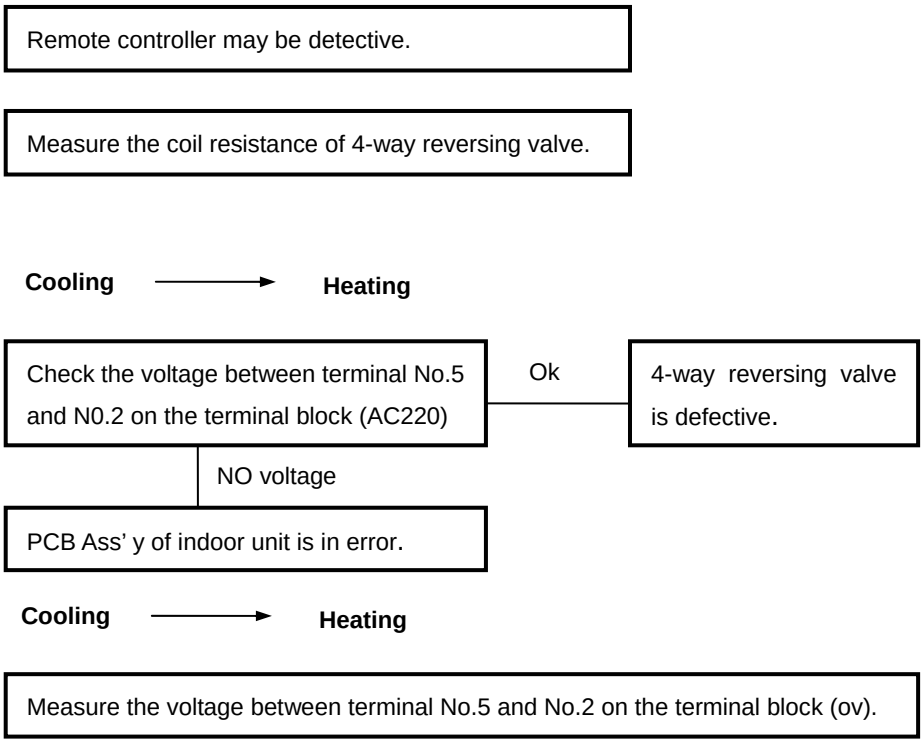

Check the fan rotation
Not rotate
Check if foreign matter is in the fan cover.
Ok
Check if fan motor is broken or foreign matter in bearing.
Measure the resistance of motor coil.
Ok
Check the capacitor of the fan motor.

### 8.3.4 Compressor does not run.

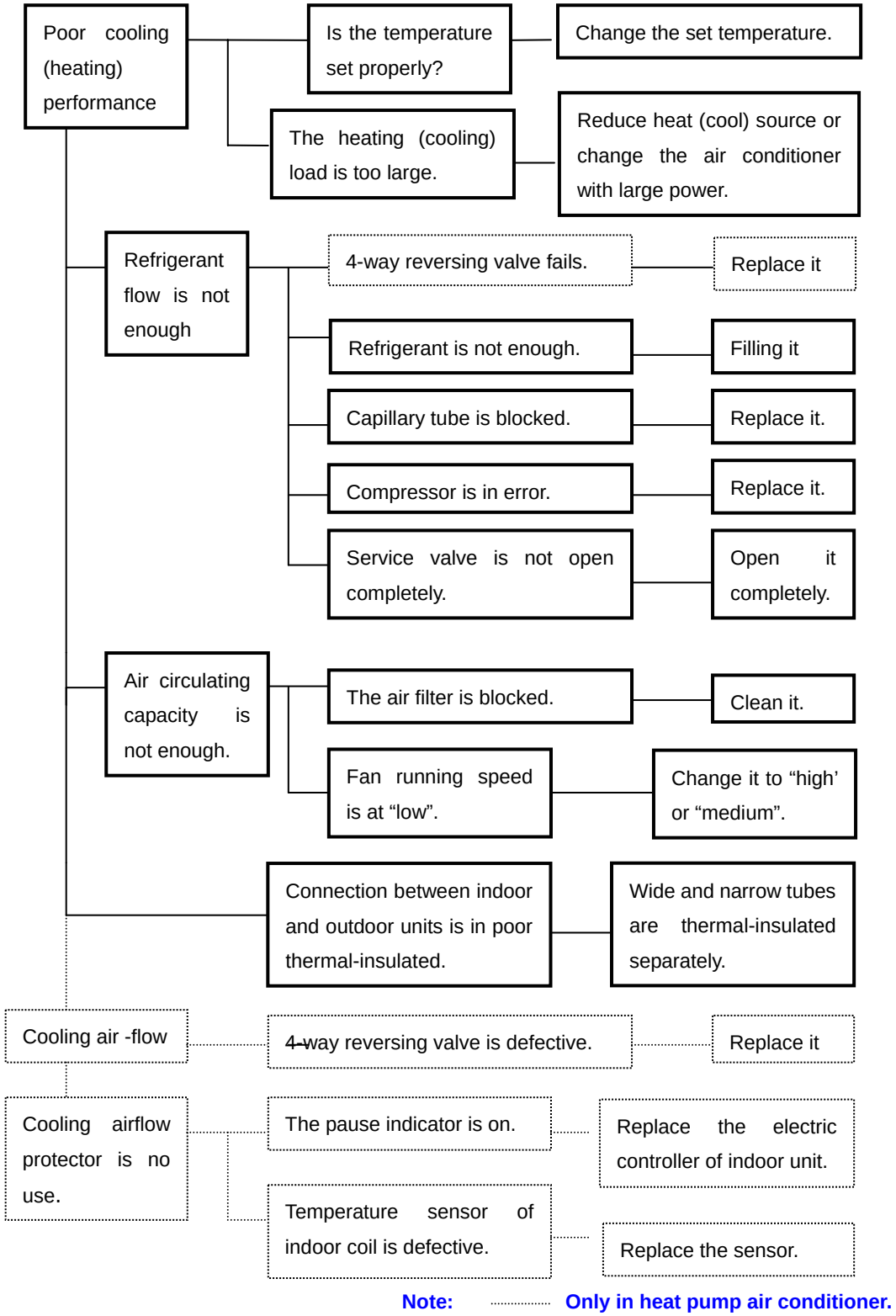

Check compressor capacitor.
Measure the resistance of compressor coil.
Measure the resistance of power relay coil.
Measure if power supply voltage is too low.
Overload protector activates.
The temperature of compressor is too high.
Refrigerant is not enough.
Yes
Fill it.
No
Rotor may be blocked.

# 8.4 Air conditioner operates, but abnormalities are observed

### 8.4.1 Bad shifting between cooling and heating mode (Not available in cooling type).


Remote controller may be detective.
Measure the coil resistance of 4-way reversing valve.
Cooling
Heating
Check the voltage between terminal No.5 and N0.2 on the terminal block (AC220)
Ok
4-way reversing valve is defective.
NO voltage
PCB Ass' y of indoor unit is in error.
Cooling
Heating
Measure the voltage between terminal No.5 and No.2 on the terminal block (ov).

**Poor cooling or heating phenomena.**


Poor cooling (heating) performance
Is the temperature set properly?
Change the set temperature.
The heating (cooling) load is too large.
Reduce heat (cool) source or change the air conditioner with large power.
Refrigerant flow is not enough
4-way reversing valve fails.
Replace it
Refrigerant is not enough.
Filling it
Capillary tube is blocked.
Replace it.
Compressor is in error.
Replace it.
Service valve is not open completely.
Open it completely.
Air circulating capacity is not enough.
The air filter is blocked.
Clean it.
Fan running speed is at “low”.
Change it to “high’ or “medium”.
Connection between indoor and outdoor units is in poor thermal-insulated.
Wide and narrow tubes are thermal-insulated separately.
Cooling air -flow
4-way reversing valve is defective.
Replace it
Cooling airflow protector is no use.
The pause indicator is on.
Replace the electric controller of indoor unit.
Temperature sensor of indoor coil is defective.
Replace the sensor.

**Note:** ..... **Only in heat pump air conditioner.**

### 8.4.2 Over cooling or heating.

Check the set temperature.

## 8.5 Sensor is defective

### 8.5.1 Temperature sensor of indoor heat exchanger is defective.

The timer of indoor unit is flash. — The sensor is open or short. — Replace it.

**Definition of open or short circuit of sensor (thermal resistor):**

**Short circuit:** The protective cover of a lead wire has been damaged, and the exposed wire is touching another metal parts. Or both lead wires have become exposed and are touching each other. Or the circuit inside the temperature sensor is closed.

**Open:** The lead wires are broken, or the circuit inside the temperature sensor is open.

# 9. Checking Electrical Components

## 9.1 Measure insulation resistance

The insulation is in good condition if the resistance exceeds 2 M Ω.

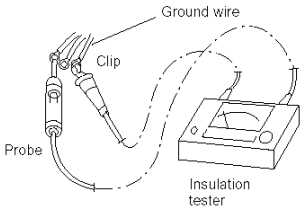


Fig. 1

### 9.1.1 Power supply wires

Clamp the ground pins of the power plug with the lead clip of the insulation resistance tester and measure the resistance by placing a probe on either of the power wires. (Fig. 1)

Then measure the resistance between the ground wire and the other power wire. (Fig. 1)

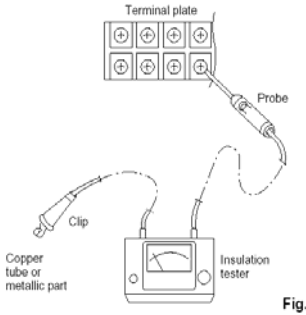


Fig. 2

### 9.1.2 Indoor unit

Clamp an aluminum plate fin or copper tube with the lead clip of the insulation resistance tester and measure the resistance by placing a probe on each terminal screw on the terminal plate. (Fig. 2)

Note that the ground line terminal should be skipped for the check.

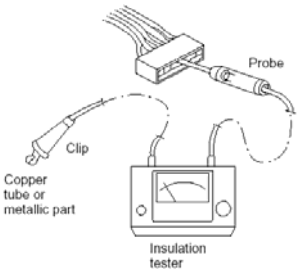


Fig. 3

### 9.1.3 Outdoor unit

Clamp a metallic part of the unit with the lead clip of the insulation resistance tester and measure the resistance by placing a probe on each terminal screw where power supply lines are connected on the terminal plate. (Fig. 2)

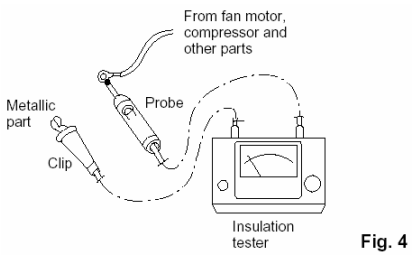



Fig. 4

### 9.1.4 Measurement of Insulation Resistance for Electrical Parts

Disconnect the lead wires of the desired electric part from terminal plate. Capacitor, etc.

Similarly disconnect the connector. Then measure the insulation resistance. (Fig. 3 and 4)

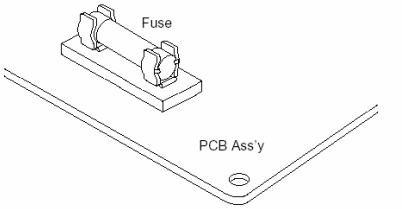



Fig. 5

**Note:**

Refer to electric wiring diagram.

If the probe can' t enter the poles because the hole is too narrow then use a probe with a thinner pin.

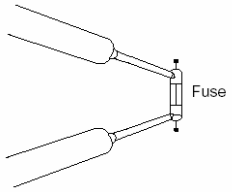



Fig. 6

## 9.2 Checking continuity of fuse on PCB ass"y

Remove the PCB ass' y from the electrical component box. Then pull out the fuse from the PCB ass' y. (Fig. 5)

Check for continuity using a multimeter as shown in Fig. 6

## 9.3 Checking motor capacitor

Remove the lead wires from the capacitor terminals, and then place a probe on the capacitor terminals as shown in Fig. 7. Observe the deflection of the pointer setting the resistance measuring range of the multimeter to the maximum value.

The capacitor is "good" if the pointer bounces to a great extent and then gradually returns to its original position.

The range of deflection and deflection time differ according to the capacity of the capaci

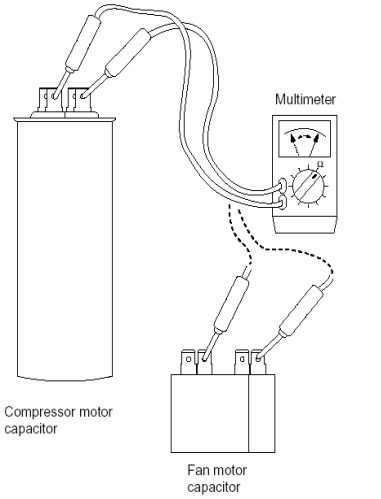



Fig. 7